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Monitoring and Evaluation of Regional Innovation Strategies

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Abstract

Almost every textbook related to the management includes chapter devoted to four key functions of management. Even less inquiring researcher will easily find term of "control". However in literature there is definitely less attention paid to term of 'monitoring', especially if it refers to Regional Strategy. It entails difficulties with searching ideal practices of monitoring and evaluation of Regional Innovation Strategy that would be adjusted to Polish condition. However, we can derive lessons from the best practices – (solutions) models that have been introduced and turn out to be useful in other regions from Europe or even globe.

The article covers the most important issues concerning essence of monitoring. It includes a consideration of some world best practise in search for the origins of monitoring of regional innovation capacity. Finally there will be presented conception how to built simple monitoring and evaluation system of Regional Innovation Strategy that has been created and implemented in lubelskie region of Poland. Finally we show how to strengthen regional policy using monitoring system outlets we described.

Essence of evaluation and monitoring

Significance of management of programs as well as social and economic undertakings has risen especially in Europe due to integration's process. It makes that the role of 'evaluation' is becoming more important nowadays. Particularly this refers to the countries, which has joined European Union recently.

According to European Commission definition 'evaluation' of program (or project) it is estimation of program (politics or project) value with reference to criterions which have been earlier defined using appropriate information[1].

Following criterions, that should be considered during evaluation, are mentioned the most often[2]:

- *effectiveness* – ability to achive intended goals,
- *efficiency*– ability to achive the goals with relatively low input in comparison with output,
- *relevance*– compatibility of inteded goals and existing needs,
- *utility*– ablitity to satisfy needs,
- *sustainability* – intervention's result existence in long-term.

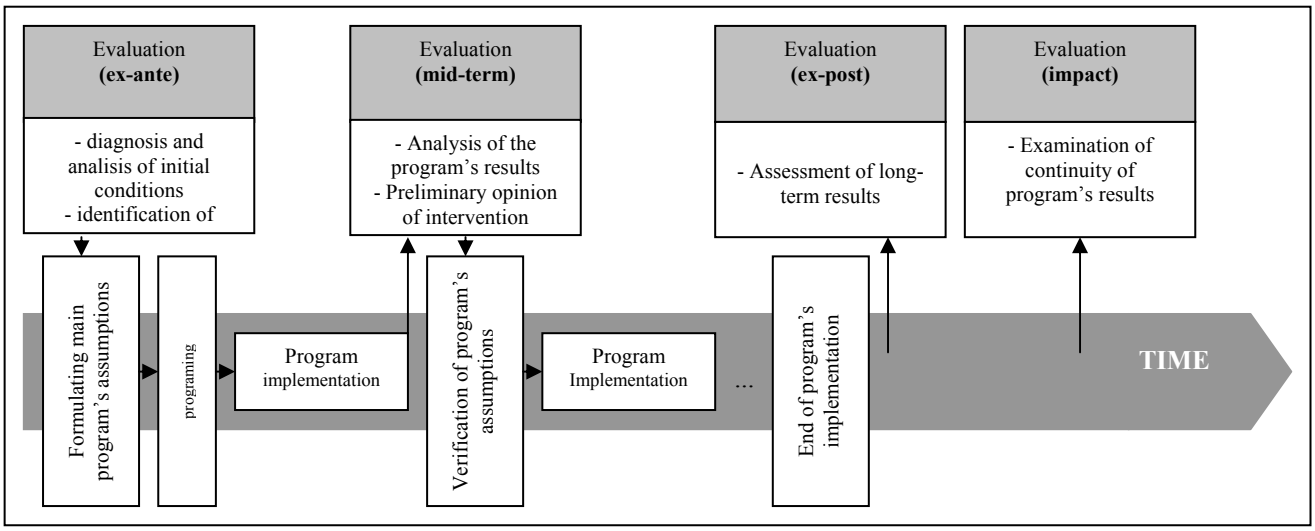
Depending on time in which evaluation is done with relation to time in which program (politic or project) is work out it can be distinguished[3] (fig. 1):

- *Evaluation ex-ante* – It is like a diagnosis. It is maden before the program will be worked out in order to deliver necessary information for set main program's assumptions.
- *Evaluation mid-term*– It is like a verification. It is carried out during phase of program's implementation. This includes evaluation of effects of the program and moreover it gives information that will be useful when new and verified assumptions will be set in future program's periods.
- *Evaluation ex-post* – It is like a reflection. It is carried out after the program was implemented but not later than 3 years after. This focus on searching for long-term results of program.

[1] European Commission, Directorate General for Regional Policy and Cohesion – "Working paper 1: Vademecum for Structural Funds Plans and Programming Documents", Brussels 2000.
[2] www.rsievallub.pollub.pl.
[3] *T. Korzeniewski Evaluation of socio-economic programs and projects in context of Poland join European Union,* (the title of orginal *work Ocena(Ewaluacja) programów i projektów o charakterze społeczno-gospodarczym w kontekście przystąpienia Polski do Unii Europejskiej*), PARP, Warsaw 2002

- *Evaluation impact* – It is like a meditation acompaning reflection. It is made after long-term since program has been implemented. This concentrates attention on answer of the question: How durable are results of the program?

Figure 1. Types of evaluation depending on time scale



Source: Made by authors, based on T. Korzeniewski Evaluation of socio-economic programs and projects in context of Poland join European Union, (the title of orginal *work Ocena(Ewaluacja) programów i projektów o charakterze społeczno-gospodarczym w kontekście przystąpienia Polski do Unii Europejskiej*), PARP, Warsaw 2002.

Depending of who evaluate two types of evaluation can be pointed out: internal and external. External evaluation is carried out by entities that were not directly related to the project (neither the phase of formulation not the phase of its implementation). These entities are chosen through put work out to tender. Internal evaluation takes form of self-assessment that led to selfreflection, and this is made by entity directly related to program who is usually responsible for program's implementation.

Michael Quinn Patton, who is one of the most famous theoretician and experienced person at the field of evaluation, he combines in a sense term of 'evaluation' with term of 'monitoring'. According to his definition evaluation it is systematic collect of data about activities and about results of the program in order to assess this program, improve effectiveness and in order to support decision-making process that refers to future programming[4].

[4] Patton M.Q. – "Utilization - Focused Evaluation. The New Century Text", Sage Publications, Thousand Oaks-London-New Delhi, 1997.

Monitoring can be defined as regular collecting of information that is used in determining of indicators and formulating guidelines for national politics. Moreover it support mutual learning process thanks to open co-ordination which is realised due to experts inspections[5]. According to The Guide – Evaluation of Socio-Economic Development[6] monitoring is an exhaustive and regular examination of the resources, outputs and results of public interventions, it is based on a system of coherent information including reports, reviews, balance sheets, indicators. Monitoring system information is obtained primarily from operators and is used essentially for steering public interventions. Monitoring is also intended to produce feedback and direct learning. It is generally the responsibility of the actors charged with implementation of an intervention.

On the basis of two mentioned definitions it can be noticed that monitoring does not refer to only one single act of assessment. It refers to recurring action consist in tracking the indicators in order to make a constructive criticism which led to 'evaluation'. Recurrence or even continuity is one of the most important attributes of monitoring.

Regional Innovation Strategy in the context of its evaluation and monitoring is complicated object of examination. It is due to the fact that on the one hand all initiatives within the confines of Strategy should be considered (and this initiatives should result in achieving goals which are set in strategy's documents). On the other hand there should be examined influence of these initiatives o environment – on the region in that case. Particularly when we consider monitoring of Regional Innovation Strategies we should focus on innovation capacity and answering the question: how does it influence on regional development.

Best practices of monitoring and evaluation of innovation performance

Evaluation and monitoring were applied in order to assess results of public interventions not long ago – first time it has been used during post-war period in United States[7]. However 'evaluation' as an independent subject of science with its own research tools emerged in seventies [8]. United States is first country at the world where monitoring of

[5] *Participation in European research 6 framework program, guide for applicant*, (the title of original: *Uczestnictwo w badaniach europejskich. 6 Program Ramowy Badań i Rozwoju Technologicznego (2002 – 2006) – przewodnik dla wnioskodawców),* Krajowy Punkt Kontaktowy 6 PR, Warszawa 2003, s. 81.

[6] *Guide on Evaluation of Socio-Economic Development (*the title of original: *Podręcznik Oceny Rozwoju Społeczno-Ekonomicznego* (http://www.evalsed.info/frame_glossary.asp).

[7] J. Bachtler, *Quod Erat Demonstradum? Evaluation of Regional Politics*, (the original title of: *Quod Erat Demonstradum? Ewaluacja Polityki Regionalnej*, Warsaw, Studia Regionalne i Lokalne Nr 4(7)/2001, s. 42.

[8] *T. Korzeniewski Evaluation of socio-economic programs and projects in context of Poland join European Union,* (the title of orginal *work Ocena(Ewaluacja) programów i projektów o charakterze społeczno-gospodarczym w kontekście przystąpienia Polski do Unii Europejskiej*), PARP, Warsaw 2002.

innovation performance at the regional level (with system approach) had been started[9]. In 1997, there was made first report that included *Index of the Massachussets Innovation Economy*. This report relied on linear mondel – there were examined resource indicators, innovation process indicators and results indicators. Input indicators described different resources for development of regional innovation and effectiveness like human resources, technology, investment and infrastructure. Innovation process indicators described technology commercialisation, entrepreneurship, ability to idea generation, as well as innovation occurring in established business. Result indicators have given the answer to key questions: what innovative economy of the region brings a local society. These result indicators contain new working place, salary's rise and improvement of standards of living for citizens.

Reporting of regional innovation performance with system approach has been successful and it encouraged American regionalist to repeat this report in regular interval (once a year) in order to use the results to support decision-making process that refers to regional development. In fact it has became system of monitoring innovation performance in region.

One of the first undertakings in Europe that led to build system of monitoring innovation performance at the regional level was Regional Innovation Observatory in Central Macedonia. This Observatory was created in 1999 and was a part of framework of RIS+ between 1999 and 2001[10]. The only available application at that time was *Massachusetts Innovation Index, which* included set of useful indicators so that is way Regional Innovation Index Central Macedonian drove inspiration from it.

European Innovation Scoreboard as a tool for tracking innovation

However nowadays new set of indicators can be used in order to track the innovation performance. In March 2000 in European Union created European Innovation Scoreboard (EIS), which is statistical tool that allows evaluating and comparing the innovation performance of the Member States. Essence of the EIS is to provide comparable results of national politics in such fields like employment, creation of knowledge, enterprise's innovation. The EIS includes 26 innovation indicators divided into 5 sets[11]: innovation

[9] Nicos Kominos, *Regional Innovation Observatories, Application in Central Macedonia, Thessaly, and Peloponnese, Greece,* IRE Workshop, Cyprus 2004.
[10] http://portal.urenio.org/English/default.htm
[11] *European Innovation Scoreboard 2005*, Commision of the European Communities, Working Paper SEC(2005), Brussels 2005

drivers, knowledge creation, innovation and entrepreneurship, application and intellectual property.

European Innovation Scoreboards include historical as well as the latest available data so that a time series is available. It thus shows not only the actual position, but also the trends over a period of time. Its purpose is to enable Member States to see for themselves in comparison with others. So the abundance of information that are included in EIS can be used by institutions responsible for development policy – firs in order to identify priorities an built strategy and then in order to measure efficacy of this strategy.

Preparation of Innovation Scoreboards at the national level was inspiration in some countries for building systems of monitoring innovation at the regional level, and similar set of indicators have been used. To being with let us consider adaptation of EIS in order to monitor innovation performance at the regional level in Italy where in Lazio have been created *Lazio Region Innovation Scoreboard –RLIS*. In fact RLIS based on indicators and methodology of EIS[12].

Idea of monitoring and evaluation of Regional Innovation Strategy of lubelskie voivodship – simplify conception

System of monitoring and evaluation had a chance to appear in Poland due to Regional Innovation Strategies. Lubelskie is one of province in which Regional Innovation Strategy (RIS) has been implemented and realised since 2005. In this Strategy two version of system of monitoring and evaluation have been included – firs simple version and second advanced which is optional. Simplified version is included due to lack of financial perspectives and. It is limited to make use of statistical data that is available at the regional level and can be received from regional or national statistical offices.

A complex version of monitoring and evaluation has become a part of foresight conception.

When starting work on simplified system of monitoring and evaluation of Regional Innovation Strategy of Lubelskie Voivodship it has been assume that following task should be met:

[12] www.observatoriofilas.it

- System should enable to assess efficacy of interventions which are taken in order to achieve aims of RIS;
- System should enable to assess an influence of interventions on region. And this influence should support regional development and regional competitiveness.

According to above in RIS of lubelskie voivodship 2 set of indicators have been pointed:

- Indicators for regional development;
- Indicators for monitoring accomplishment of strategic aims.

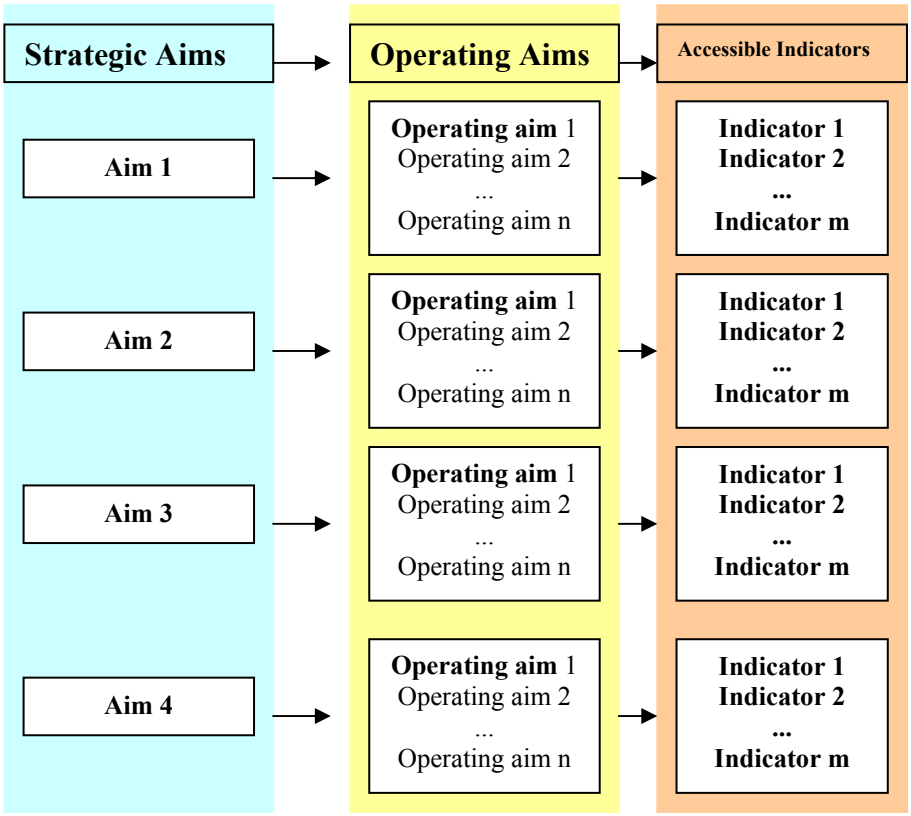
Within the confines of firs group 6 indicators have been distinguished divided into 3 groups that enable adequately:

- assessment of regional social potential for innovation creation (share of high educated population within whole region's population, employment in research and development),
- examination of support for innovation in region (investment's expenditures and expenditures on research and development activities),
- assessment of influence of innovation on regional development (Gross Domestic Product and Gross Add Value).

It is easy to notice that number of selected indicators has been limited almost to minimum. However, these indicators represent commonly data, which is made available by regional statistical office. This makes that regular observation is possible. Moreover, it should be affirm that in evaluation report selected indicators need to be supplemented with others indicators (available during times of evaluation) what would make evaluation more valuable.

Second group of indicators was established on the basis of strategic aims that are included in RIS. These strategic aims appoint some operating aims (fig. 2). Accessibility was additional criterion during process of selection of indicators in order to make yearly evaluation cycle.

Figure 2. General procedure of indicator's selection.



Source: Made by authors.

Indicators for monitoring accomplishment of strategic aims can be devided into 4 groups (according to number of aims in RIS lubelskie voivodship). These indicator make possible tracking[13]:

- improvement of regional competitiveness,
- improvement of effectiveness in agriculture,
- growth in sector of ecologically friendly products,
- improvement of educational and science offer competitiveness.

Moreover it has been judged monitoring of regional project, which are realised within the confines of RIS, necessary. Particularly it refers to the project directly combined to innovations. To this end, database of indicators need to be supplemented with result and effect indicators, collected in the SIMIK base.

To recapitulate, it has been assumed in RIS of lubelskie voivodship that minimal report will contain:

[13] Detailed list of indicators can be found in document or Regional Innovation Strategy of Lubelskie Voivodship www.rsi.lubelski.pl

- Report in which indicators for regional development will be included;
- List of projects that directly refer to innovation strategy and are financed by public founds, with short profile of this project including its result and effect indicators;
- Report on level of advanced in activities which refer to operating aims that are impossible to measure.

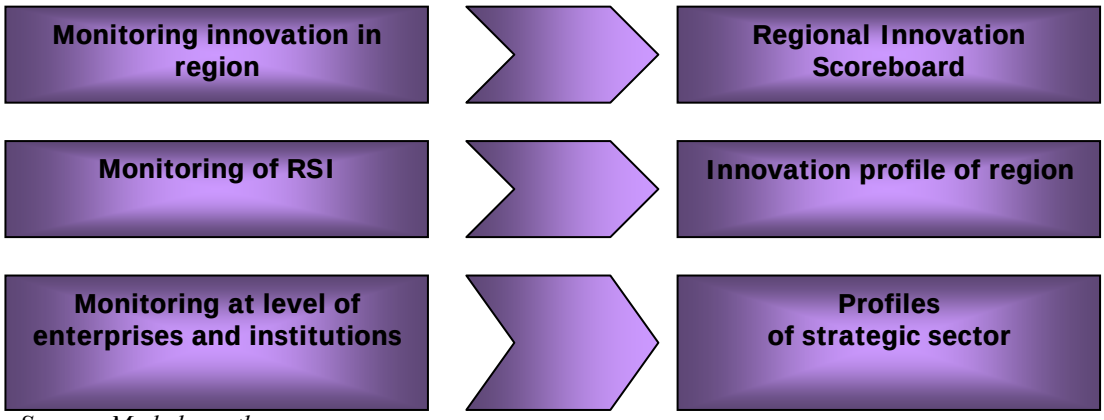
Idea of monitoring and evaluation of Regional Innovation Strategy of lubelskie voivodship – complex conception

Complex conception of monitoring and evaluation of innovation performance was included in RIS of lubelskie voivodship. This is based on system approach and it determine to monitoring as a "black box" with input, output and feedback.

Input would contain not only aims and priorities of strategy (from RIS document) but also quantitative and qualitative data from statistical offices, patent offices, data collected in surveys (about supply and demand on innovation), telephone interviews, opinions of experts, inspection and interview in institutions.

Complex system of monitoring could be made at three levels (fig. 3). This would make possible to show: Regional Innovation Scoreboard, which enable to compare innovation performance of Lubelszczna region with others region from Europe; Innovation Profile of Region, which would disclose the most important fields for RIS; finally it would make possible to keep track of profiles of strategic sectors, which would inform about changes in enterprises in context of strategy.

Figure 3. Level of monitoring and output data



Source: Made by authors.

It is quite obvious, that Regional Innovation Scoreboard would be based on Indicators from EIS. However, nowadays most necessary statistical data for Regional Innovation Scoreboard is not accessible at the regional level.

Innovation profile of region in complex system of monitoring and evaluation of RIS could contain 8 fields, which relate to steps of evolution of innovation strategy in region[14]:

- Identification of regional competencies;
- Creation of regional knowledge;
- Stimulation of innovation activities;
- Focus on regional strength;
- Implementation of firms innovation activities;
- Internationalisation;
- Marketing of the regional innovation profile;
- Financing of the regional activities and supporting infrastructure.

To every mentioned field appropriate group of indicator could be ascribed[15]. Qualitative data could be collected using survey. Survey should be spread especially among enterprises and institutions, which are actors of regional innovation system and participate in process of implementation of Regional Innovation Strategy. Qualitative indicators would be calibrate in order to make its comparable in successive monitoring cycle.

Alternative action led to determine innovation profile of region is analysis of supply and demand on innovation, all the more this analysis had been done – during process of formulating of RIS of lubelskie voivodship[16]. Moreover supply and demand on innovation analysis brings useful data for profile of strategic sectors. Profile of strategic sector would include such information as a: employment, average salary, expenditures on innovation in sectors, number of patent applications, share of sector in Gross Domestic Product and growth rate of sector. Finally profiles of sectors would contain information about leading companies. Assessment and comparison of their technological strategies would point at the sector in which companies needs are the biggest. The most common indicators would be useful here[17]: intensity of research and development, research and development in relation to production

[14] More about steps of evolution of innovation strategy in regions, along with suitable set of indicators can be found in thematic documents of best practice, one of this is project STRINNOP – *Strengthening the Regional Innovation Profile,* www.strinop.net.

[15]Methodology for indicators can be found in: *Draft Indicator set for the Regional Innovation Profile – according STRINNOP Approach, Thematic Network, 2003.*

[16] More information about analysis of supply and demand on innovation can be found on a web: www.rsi.lubelskie.pl

investment, intensity of basic research, new product sales, number of patent application in per 100 workers in research and development.

Summary

Realisation of aims of Regional Innovation Strategy is financed by public founds significantly. This found should be spend as effectively as it is possible. Every public institution spending the public money on supporting research and development activities or innovation projects – does not matter if it is European Commission or one of Member States or even only the region – should answer the question if money that are spend helps to achieve strategic goals. When answer is positive than results should be widespread in order to stimulate and motivate future innovative activities of firms. But if answer is negative, than changes will be needed. On way or another spending public founds must be transparent and led to achieving a goals in this connection monitoring and evaluation of the regional strategies is necessary.

Every time when intervention is ended (and sometimes during the intervention) time of reflection comes and verification is needed.

In case of Regional Innovation Strategy it is advisable, that evaluation should be serial, and should base on strict criterions and indicators that can be measured, but that kind of evaluation become a monitoring. Although the monitoring in context of regional strategy is not touched by polish literature, polish regionalist can draw from rich "well of experiences" of others countries, and emulate best solution checked in practice. Unfortunately presently adaptation of these practices in Poland condition meet a number of barriers – financial, information – so that is why two conceptions (minimal and optional) of system of monitoring and evaluation of regional strategy are justified. This is what have been done in Regional Innovation Strategies in which is included simplify version of monitoring based on minimum number of indicator and complex idea that is a part of regional foresight.

[17] Detailed discription and presentation of mentioned indicators can be found in: W. A. Kasprzak, K. I. Pelc, Technical Srategies – Forecast, (the original title of: *Strategie Techniczne – Prognozy*), ATUT Wrocławskie

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